

ABSTRACT

A hydrocarbon fuel reformer that is supplied with water vapor extracted from the reformer's effluent stream. In particular, the present invention provides a power plant fuel processor for the production of hydrogen from a hydrocarbon fuel, comprising:

- (a) a reactor for the production of hydrogen using an oxidant, water and hydrocarbon fuel; and
- (b) a water transfer device that transfers water vapor from the reformate produced by said reactor to the oxidant used by said reactor, comprising a water-transfer membrane.